AMENDED CLAIM SET:

1. – 11. (cancelled).

12. (currently amended) A method for analyzing a trace amount of a component in a sample with improved detection sensitivity, which method comprises the steps of:

providing a ~~for use in the~~ high performance liquid chromatographic apparatus ~~according to Claim 10, which comprises~~ having a flow velocity gradient of 250 microliters per minute or less, said apparatus comprising a solvent pump (P1), and injector (I), and a switching valve (V) connected in that order in a first line and a solvent pump (P2), a switching valve (V), a diffusion promoting device (DU), a separation column (C), and a detector (D) connected in that order in a second line, wherein said diffusion promoting device comprises a solvent inlet tube and a solvent outlet tube having at least (i) a solvent inlet tube and a solvent outlet tube with different inner diameters or (iii) a solvent outlet tube connected to a solvent inlet tube by a connecting part having a diameter that is larger than the diameters of the diameters of the solvent inlet and outlet tubes;

trapping the target component in ~~the~~ a component concentration column (M) by means of a mobile phase discharged from the solvent pump (P1);

discharging a different mobile phase from the solvent pump (P2) by turning the switching valve; and

eluting the target component from the separation column (C) through diffusion of the target component using the diffusion promoting device (DU).

13. (currently amended) A method for analyzing a trace amount of a component in a sample with improved detection sensitivity, which method comprises he steps of:

providing a ~~for use in the~~ high performance liquid chromatographic apparatus ~~according to Claim 11, which comprises~~ having a flow velocity gradient of 250 microliters per minute or less, said apparatus comprising a solvent pump (P1), a switching valve (V), a solvent mixer (MC), and a switching valve (V) connected in that order in a first line, a solvent pump (P2), a switching valve (V), a diffusion promoting device (DU), a separation column (C), a detector (D) in a second line, and a switching valve (C), a component concentration column (M), and a switching valve (V) in a third line, said diffusion promoting device comprises a solvent inlet tube and a solvent outlet tube having at least (i) a solvent inlet tube and a solvent outlet tube with different inner diameters or (iii) a solvent outlet tube connected to a solvent inlet tube by a connecting part having a diameter that is larger than the diameters of the diameters of the solvent inlet and outlet tubes;

injecting the target component into the component concentration column (M) while filling a solvent in the solvent mixer (MC) by means of the solvent pump (P1);

discharging a mobile phase from the pump (P2) by turning the switching valve; and

eluting the target component from the separation column (C) through diffusion of the target component using the diffusion promoting device (DU).

14. – 18. (cancelled).